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How to combine survey media (web, telephone, face-to-face): Lyon and Rhône-Alps case study

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Abstract

We present the results of a web survey presented to non-respondents of a main telephone survey and compare declared mobility of both survey modes. After a description of the population who answered online, we summarise travel patterns and estimate a selection bias. Results are consistent with the hypothesis of an under declaration attributable to the web, as far as we know, that the risk of omitting trips concerns especially short trips and less constrained trip purposes. From comparison with a previous face-to-face and web survey we give some perspectives for future household travel surveys.

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Keywords: Household travel surveys; web surveys; mixed modes surveys; data comparability; response rate; sampling coverage; design issues; selection bias.

1. Introduction

Survey response rates are decreasing across the world (Atrostic et al., 2001; Curtin et al., 2005). Household travel surveys follow the same tendency. Even if weighting procedures compensate for the incidence of non-response, it is always necessary to postulate that people with some socio-demographic characteristics who do not respond to a survey have the same behaviour as people with the same socio-demographic characteristics who respond. But evidence seems to indicate that it is not the case for travel (Richardson, 2000). Therefore, survey non-response might

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produce bias. Efforts to increase response rates for traditional surveys include improving the questionnaire, reducing respondent burden, and increasing reminders among others. Even if results are generally positive, it is in most cases not sufficient. According to Alsnih (2004), a way to increase the response rate and produce more reliable results is to propose a second media to answer, which initiated a project of a web survey in parallel to the household travel survey conducted by telephone in the Rhône-Alpes area. The main survey is conducted according to the CERTU methodology (CERTU, 1998): 12,417 completed interviews were conducted between October 2012 and March 2013. Households who refused to respond (about 27.5%) or were not contactable after a certain number of attempts (about 46%) were asked to respond by the web. Those households were informed by a letter of this option, followed by one reminder for only a small part of the sample due to budget constraints.

This new and interactive mode of data collection offers respondents the option to choose an appropriate time to complete the questionnaire, and does not require setting a phone appointment with the interviewer (Bourbonnais & Morency, 2012). However, the internet penetration rate is still uneven, and users' capabilities and equipment vary. If web surveys reduce the non-response rate, the implementation of a web survey raises specific problems, in terms of design and administration of the questionnaire. An online survey requires an auto-administrated questionnaire. It is important to work on the survey's attractiveness, simplification and technical feasibility to encourage potential respondents. The task is particularly complex for gathering individual trips. Lastly, if the launch of a web survey makes it possible to study behaviours little represented up to now (such as hyper-mobile households, with shifted schedules...), the question of data comparability remains (Stopher & Jones, 2003). The danger when databases are merged is that a sample selection bias will be created that will compromise the accuracy of explanatory models of travel behaviour.

This paper initially discusses web potential for household travel surveys, especially in a mixed modes framework (section 1). Then, some thoughts on the Rhône-Alpes area online questionnaire and the survey methodology are provided (section 2). We present the results of the Lyon web travel survey compared to the telephone survey (section 3), and characterise a selection bias (section 4). Lastly, we compare these results to the previous face-to-face and web surveys conducted in Lyon in 2006 (section 5) and give some perspectives for future household travel surveys (section 6).

2. Web potential for household travel surveys

Considering the democratisation of data processing and internet access, web surveys are promised as a fast method. Usually used in specific fields like marketing, it seems interesting to discuss the relevance of these new media for travel surveys, and determine under which conditions the use of the web can increase data quality, by taking into account the non-respondents to phone surveys. The main limit of the internet is the penetration rate, which is still too low in France for internet users to be considered representative of the French population. The idea is to ask some households to respond by web, while keeping the traditional method of data gathering by phone. This makes it possible to reach a large part of the reference population, and to study household travel patterns in-depth.

2.1. Why such a passion for web surveys?

Household travel surveys are generally long and expensive to implement. The objective is to survey a representative sample of households or individuals about their daily trips, using a quite complex questionnaire (Christensen, 2012). This kind of survey is usually managed in France face-to-face or by phone in medium French cities, with several household members being involved. But respondents are not always available to answer the survey and the non-response rate suggests many issues with this methodology. Variable costs are lower in a web survey than in a phone survey due to no staff. The use of the web media makes it possible to reduce the average cost of contact. On the other side, fixed costs might be higher, due to the development of the web questionnaire, but the design can easily be stored and re-used later. Thus, web media remains the least expensive, especially for large samples (Couper et al., 2001).

This mode of computer-assisted data gathering also allows an instantaneous checking of the provided answers (Dillman, 2007). To verify the validity of responses, dynamic controls occur throughout the questionnaire, and it is possible to send requests to the interviewees for clarification or correction in case of inconsistency. The quality of

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